

WHAT IS CLAIMED IS:

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1. A magnetoresistive film in which at least a
first magnetic layer, a second magnetic layer, a
nonmagnetic layer, a third magnetic layer, and a fourth
5 magnetic layer are stacked in the order named,

wherein at least said first magnetic layer
comprises Gd and said fourth magnetic layer comprises
Tb and/or Dy,

wherein each of said first magnetic layer and
10 fourth magnetic layer has an easy axis of magnetization
along a perpendicular direction to a film plane, and
the second magnetic layer and the third magnetic layer
have a greater spin polarization than the first
magnetic layer and the fourth magnetic layer, and

15 wherein said second and third magnetic layers are
magnetic layers comprising at least Co and Co contents
thereof are not less than 20 at.% nor more than 90
at.%.
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2. The magnetoresistive film according to Claim
1, wherein the Co contents of said second and third
magnetic layers are not less than 30 at.% nor more than
50 at.%.
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3. The magnetoresistive film according to Claim
1, wherein said first magnetic layer and second
magnetic layer are exchange-coupled with each other and

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said third magnetic layer and said fourth magnetic layer are exchange-coupled with each other, and wherein magnetization of the second magnetic layer and magnetization of the third magnetic layer are oriented in the perpendicular direction by exchange coupling force from the first magnetic layer and from the fourth magnetic layer.

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cut.
4. The magnetoresistive film according to Claim 1, wherein thicknesses of said second magnetic layer and third magnetic layer are not less than 0.2 nm.

15 5. The magnetoresistive film according to Claim 4, wherein the thicknesses of said second magnetic layer and third magnetic layer are not less than 0.5 nm nor more than 1.5 nm.

20 6. The magnetoresistive film according to Claim 1, wherein said first magnetic layer and said fourth magnetic layer are alloy films of rare earth metal and transition metal.

25 7. The magnetoresistive film according to Claim 1, wherein said nonmagnetic layer is comprised of an insulating film.

8. The magnetoresistive film according to Claim

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7, wherein said nonmagnetic layer is comprised of an oxide.

9. The magnetoresistive film according to Claim 1, wherein said second and third magnetic layers comprise Fe.

10. A magnetic memory comprising:
a substrate;
a magnetoresistive film formed on the substrate,
which comprises a first magnetic film, a second
magnetic film, a nonmagnetic layer, a third magnetic
film, and a fourth magnetic film, wherein said second
magnetic film and third magnetic film comprise at least
Co and a magnetoresistance ratio of said
magnetoresistive film is not less than 10%;
a write line for reversing magnetization in the
magnetic films of the magnetoresistive film; and
a bit line provided on the opposite side to said
substrate with respect to the magnetoresistive film.

11. The magnetic memory according to Claim 10,
wherein contents of said Co are not less than 20 at.%
nor more than 90 at.%.

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